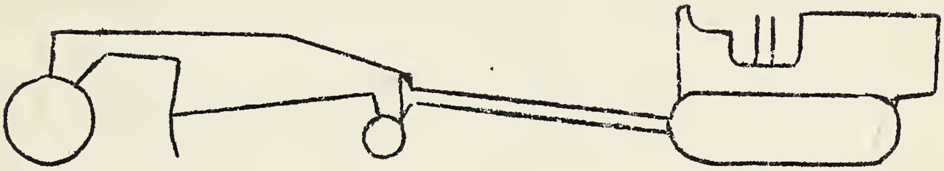
CONSTRUCTION



HINTS

UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE

Vol. 1 Washington, D. C. August 24, 1935. No. 8

The EDITOR is trying out a new idea in this issue. The information shown on pages 3 and 4 has been so arranged that the pages may be cut to fit your copy of the Engineering Field Tables. From time to time, other bits of useful information will be similarly arranged for your convenience.

We have on hand quite a supply of useful "kinks" sent in by the Regions. We are arranging them for publication and they will appear in an early issue.

The following is taken from the July 20th issue of the INTERMOUNTAIN REGION - DAILY NEWS:

> "Skipper says that he doesn't mind having a freshman define a log scale as an insect or forest litter as young trees, but when it comes to calling a logarithm a song of the lumbermen it is going too far."

H.L.F.

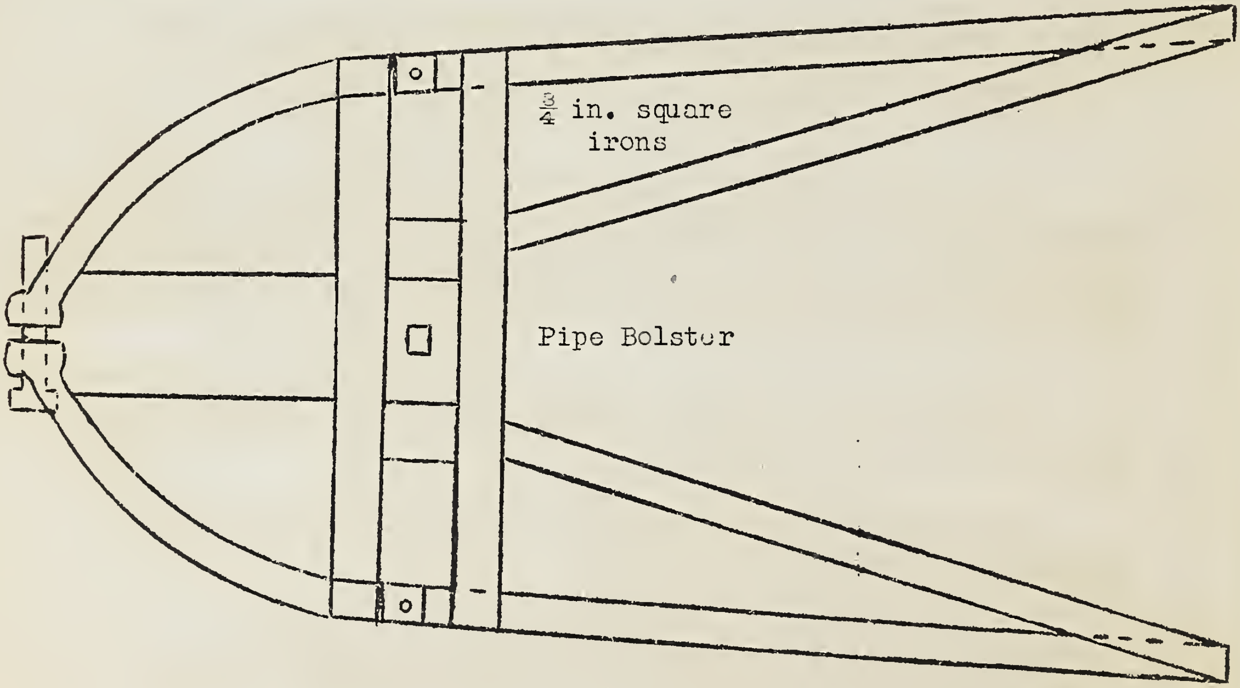
(Over)

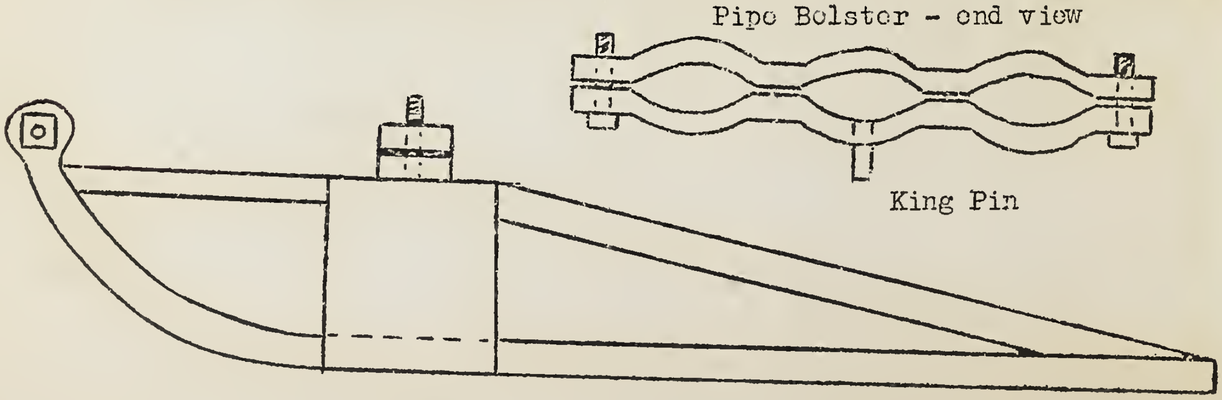
FERGUSON PIPE SLED

Developed in 1933 by A. L. Ferguson, Supt. of Nevada CCC Camp
Region 4

This equipment can be made by any camp blacksmith and is highly recommended where it is necessary to drag pipe into inaccessible areas for reasonable distances.

The sled is made of 3/4" iron and is provided with runners with an elevated bolster which is fastened with a king pin, with a three slot pipe clamp into which any size of pipe up to 4" can be clamped. For larger pipe a heavier clamp would be necessary. The pipe is placed in the slots and bolted down so that the pipe cannot slip. The slot protects the ends from damage. The rear end of the pipe is protected by protection caps screwed on to the threads. One horse will handle three 20 ft. lengths of two-inch pipe over a fairly steep terrain.





Scale 3" = 1'

TABLE FOR DETERMINING CONTENTS OF HORIZONTAL STORAGE TANKS -- ANY SIZE.

Square the diameter in inches and multiply by the length in inches; multiply by .0034; the result is the capacity in gallons.

Divide the number of inches which the gage shows to be in the tank by the diameter in inches to find the percent of the diameter which the gage equals. Multiply the total capacity of the tank by the decimal shown opposite such percent in the following table -- the result will be the contents in gallons.

If the percent of diameter be other than even, determine the proper decimal by proportion. Example: percent equals 3921; take the decimal for 39% and add to it 0.21 of the difference between the decimals for 39% and 40%.

Example: 43 inches in a tank 9ft dia. x 30 ft.

```
      108        .3981          39%  .361035
      108   108  43.000         add  .010128
      864        324                 .371163
    108          1060                  14276
    11664         972                2226978
      360          880              2598141
   699840          864              742326
  34992             160           1484652
  4199040           108           371163
    .0034                         5298.722988
 16796160      .373539- 40%      Contents,Gallons
 12597120      .361035- 39%
14276.7360 Cap..012504 diff.
                   .81 OVER
                012504
               100032
             .01012824 to add
```

%	Decimal	%	Decimal	%	Decimal	%	Decimal
1	.001759	26	.206502	51	.512732	76	.815334
2	.004799	27	.217792	52	.525440	77	.826268
3	.008782	28	.229195	53	.538137	78	.836923
4	.013480	29	.240633	54	.550868	79	.847362
5	.018665	30	.252298	55	.563599	80	.857654
6	.024509	31	.263996	56	.576251	81	.867707
7	.030795	32	.275729	57	.588846	82	.877579
8	.037501	33	.287711	58	.601475	83	.887281
9	.044627	34	.299762	59	.614002	84	.896766
10	.052025	35	.311926	60	.626461	85	.905935
11	.059832	36	.324061	61	.638965	86	.914886
12	.067979	37	.336340	62	.651333	87	.923511
13	.076489	38	.348667	63	.663660	88	.932021
14	.085114	39	.361035	64	.675939	89	.940168
15	.094065	40	.373539	65	.688074	90	.947975
16	.103234	41	.385998	66	.700238	91	.955373
17	.112719	42	.398525	67	.712289	92	.962499
18	.122421	43	.411154	68	.724271	93	.969205
19	.132293	44	.423749	69	.736004	94	.975491
20	.142346	45	.436401	70	.747702	95	.981335
21	.152638	46	.449132	71	.759367	96	.986520
22	.163077	47	.461863	72	.770805	97	.991218
23	.173732	48	.474560	73	.782208	98	.995201
24	.184466	49	.487268	74	.793498	99	.998241
25	.195501	50	.500000	75	.804499	100	1.000000

A FORMULA FOR COMPUTING THE ROPE CAPACITY IN FEET OF ANY SIZE DRUM

Dimensions A, B, and C, to be in inches.

RULE: Add the depth of flange (A) to diameter of drum (B). Multiply the sum by the depth of flange (A). Multiply the result by the width of the drum between the flanges (C). Multiply product by figure in column opposite rope size.

EXAMPLE: (A B) x A x C x Multiplier.

Multipliers

1/4 "	4.16	1 3/8"	.138
3/8 "	1.86	1 1/2"	.116
7/16"	1.37	1 5/8"	.099
1/2 "	1.05	1 3/4"	.085
9/16"	.828	1 7/8"	.074
5/8 "	.672	2 "	.066
3/4 "	.465	2 1/8"	.058
7/8 "	.342	2 1/4"	.052
1 "	.262	2 3/8"	.046
1 1/8"	.207	2 1/2"	.042
1 1/4"	.167		

TABLE FOR CALCULATING NUMBER OF FEET B.M. IN ONE PIECE OF LUMBER ANY LENGTH FROM 4 FEET UP.

Length Feet		Length Feet		Length Feet	
4	3.003	$9\frac{3}{4}$	1.231	$15\frac{1}{2}$	.774
$4\frac{1}{4}$	2.823	10	1.2	$15\frac{3}{4}$	.7623
$4\frac{1}{2}$	2.667	$10\frac{1}{4}$	1.171	16	.7505
$4\frac{3}{4}$	2.526	$10\frac{1}{2}$	1.143	$16\frac{1}{4}$	.7386
5	2.4	$10\frac{3}{4}$	1.116	$16\frac{1}{2}$	.7273
$5\frac{1}{4}$	2.286	11	1.091	$16\frac{3}{4}$	.7164
$5\frac{1}{2}$	2.182	$11\frac{1}{4}$	1.067	17	.7057
$5\frac{3}{4}$	2.087	$11\frac{1}{2}$	1.043	$17\frac{1}{4}$	.6959
6	2.0	$11\frac{3}{4}$	1.021	$17\frac{1}{2}$	.686
$6\frac{1}{4}$	1.92	12	1.0	$17\frac{3}{4}$	.6762
$6\frac{1}{2}$	1.846	$12\frac{1}{4}$	.9794	18	.6667
$6\frac{3}{4}$	1.778	$12\frac{1}{2}$	.9597	$18\frac{1}{4}$	.6574
7	1.714	$12\frac{3}{4}$	.9416	$18\frac{1}{2}$	.6486
$7\frac{1}{4}$	1.655	13	.9234	$18\frac{3}{4}$	.6402
$7\frac{1}{2}$	1.602	$13\frac{1}{4}$	.9058	19	.6317
$7\frac{3}{4}$	1.548	$13\frac{1}{2}$	.8889	$19\frac{1}{4}$	.6234
8	1.5	$13\frac{3}{4}$	.8726	$19\frac{1}{2}$	.6154
$8\frac{1}{4}$	1.455	14	.857	$19\frac{3}{4}$	.6076
$8\frac{1}{2}$	1.412	$14\frac{1}{4}$	.8424	20	.6000
$8\frac{3}{4}$	1.372	$14\frac{1}{2}$	.8278	$20\frac{1}{4}$	.5928
9	1.333	$14\frac{3}{4}$	.8137	$20\frac{1}{2}$	.5855
$9\frac{1}{4}$	1.297	15	.8000	$20\frac{3}{4}$	.5784
$9\frac{1}{2}$	1.263	$15\frac{1}{4}$	.7868		

EXAMPLE: One piece $5\frac{3}{4}$" x $6\frac{1}{4}$" - 15'6".
The constant for $15\frac{1}{2}$' is .774.

Then $\frac{5\frac{3}{4} \times 6\frac{1}{4}}{.774} = 46.42$ feet B.M.

This table is especially useful in connection with the slide rule.